

ABSTRACT

FIELD EMITTERS AND DEVICES

A broad area field electron emitter comprises a plurality of emitter cells of layered structure. Each cell comprises a hole having a layer of field electron
5 emission material 501 at its base. A gate electrode 503 is spaced from the emitter layer 501 by a dielectric material 502 having a first region in contact with the emitter layer 501 and a second region in contact with the gate electrode 503. The cell diameter is greater at the level of the gate 503 than at the level of the emitter layer 501, thus enabling electrons in electron beam 505 and emitted from sites
10 adjacent to the side walls of the cell to avoid interception by the gate 503 at point 506. This reduces cell-wall charge between the first and second regions of dielectric material 502, and other means for achieving this are disclosed.